Title: Characterization of hydrated lime-stabilized brown kaolin clay

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Abstract: The effect of the calcium-based stabilizers like lime on the clay soil characterizations has been studied in this research. This study was carried out in an attempt to identify the time-dependent soilchemical reactions for lime chemically stabilized Brown Kaolin clay samples. The data for the study of characteristics of treated samples were obtained from X-ray diffractometer (XRD), field emission scanning electron microscopy (FESEM), and Fourier transform infrared spectroscopy (FTIR). Furthermore, to illustrate the effect of lime on the strength, a series of laboratory tests were carried out by unconfined compressive strength. Based on the micro-structural analyses, it was observed that kaolinite is rapidly exhausted by pozzolanic reactions to produce the Gismondine (CASH), which is responsible on gain the strength for the lime treated samples with progressing time. On the other hand, it was noticed Illite mineral did not show any reacted with advancing time. In addition, based on the morphology of the treated samples, the presence of the cementious products were observed. These outcomes proved the effectiveness of lime to stabilize kaolin clay